

REMARKS/ARGUMENTS

Amendments were made to the specification to correct errors and to clarify the specification. No new matter has been added by any of the amendments to the specification.

Claims 1-2, 4-12, and 14-36 are pending in the present application. Claims 1, 10-11, and 20 were amended, claims 2 and 12 were canceled, and new claims 37-38 were added. Support for the amended claims exists in the original specification at least on p. 16, ll. 19-23. Support for the new claims exists in the original specification at least on p. 18, l. 13. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 102, Anticipation

The Examiner rejects claims 1-36 under 35 U.S.C. § 102(b) as anticipated by *Tobise et al.*, Magnetoresistive Playback Head, United States Patent 5,748,416 (May 5, 1998) (hereinafter "*Tobise*"), *Fontana et al.*, Spin Valve Magnetoresistive Element With Longitudinal Exchange Biasing of End Regions Abutting the Free Layer, and Magnetic Recording System Using the Element, United States Patent 5,528,440 (June 18, 1996) (hereinafter "*Fontana*"), and *Miyauchi et al.*, Magnetoresistance Effect Transducer Element with Continuous Central Active Area, United States Patent 5,852,533 (December 22, 1998) (hereinafter "*Miyauchi*"). These rejections are respectfully traversed.

a. As to Claims 1, 4-5, 7, 11, 14-15, 17, and 21-36

The Examiner has rejected claim 1, which is representative of all the claims in this group, in view of *Tobise*, *Fontana*, and *Miyauchi*. Particularly, in rejecting claim 1 in view of *Tobise*, the Examiner states:

Regarding claims 1 and 11, *Tobise et al.* discloses a reduced sensitivity spin valve sensor apparatus (figure 15), comprising:
a spin valve sensor; and
at least one magnetic effect inducing device 21,
wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements (column 13, lines 67; column 14, lines 45-48 and 15-21).

Office action dated December 13, 2005, pp. 2-3.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of the

claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983). In this case, each and every feature of the presently claimed invention is not identically shown in the cited reference, arranged as they are in the claims.

In the currently amended form, claim 1 recites:

1. A reduced sensitivity spin valve sensor apparatus, comprising:
a spin valve sensor; and
at least one magnetic effect inducing device, wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields, and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements and wherein the spin valve sensor is positioned between at least two insulating films.

Contrary to the Examiner's assertion, *Tobise* does not teach "wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements." The claim clearly recites "stiffening elements," teaching the magnetic stiffening of the spin valve sensor. As a person of ordinary skill in the art knows, magnetic stiffening of the spin valve sensor is the use of a magnetic bias to increase the resistance to the free layer's ability to rotate in the presence of a magnetic medium. By reducing the free layer's ability to rotate, greater magnetic flux from the magnetic medium is required to cause the same amount of rotation in the free layer, as compared to the magnetic flux required to rotate a non biased free layer. Thus, the magnetic stiffening effectively reduces the sensitivity of the spin valve sensor, which incorporates the biased free layer, to the magnetic flux from the magnetic medium.

Claim 1 specifically teaches a *reduced sensitivity* spin valve sensor incorporating a pair of permanent magnets as *stiffening elements*. The claimed invention recites incorporating the stiffening elements, to *thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields*.

Tobise, on the other hand, does not teach or disclose magnetic *stiffening* or *stiffening elements* in the entire disclosure. *Tobise's* teachings in this respect are limited to a pair of magnets applied for reduction of Barkhausen noise. *Tobise's* invention has an entirely different purpose, and to that end, uses permanent magnets with magnetic characteristics that are diametric opposite of the stiffening elements as claimed. In the sections that the Examiner cites, *Tobise* actually teaches that stiffening is undesirable in the invention that *Tobise* teaches.

The sections cited by the Examiner for rejection of claim 1, along with other relevant matter not

cited from *Tobise* are quoted below:

A permanent magnet film (CoCrPt alloy film) 21 is formed on either side of this stack.

Referring to FIG. 7 and FIG. 8, there are shown the changes in output and Barkhausen noise elimination for different values of r , where r is the ratio of the thickness of the permanent magnet film to the thickness of the movable magnetization film. As in the SAL-type MR head, the spin-valve MR head can eliminate Barkhausen noise for r in the range of 0.5-3. The output decreases as r increases. This might be because in the spin-valve head the magnetic field from the permanent magnet film is not applied only to the movable magnetization film but also leaks to the region around the movable magnetization film, thereby influencing the signal field from the medium.

When there is no permanent magnet film as in the SAL-type MR head in Embodiment 2, Barkhausen noise frequently occurs and stable output could not be obtained. Based on these results, it was found that by setting the thickness of the permanent magnet film appropriately in relation to the thickness of the movable magnetization film, it is possible to eliminate Barkhausen noise while also providing longitudinal bias for adequate output.

Referring to FIG. 9 and FIG. 10, there are shown the changes in output and Barkhausen noise elimination in relation to different values of the $(B_r \cdot t)$ product. As the $(B_r \cdot t)$ product increases, the output decreases gradually, and then decreases rapidly at 500 Gmicrons or more.

Tobise, col. 13, l. 67 – col. 14, l. 1; col. 14, ll. 15-35, 45-53. It is also seen that Barkhausen noise was not found at 200 Gmicrons or higher. The results from this study indicate that a high output can be obtained and Barkhausen noise can be eliminated for a $(B_r \cdot t)$ product in the range of 200-500 Gmicrons.

Tobise, col. 13, l. 67 – col. 14, l. 1; col. 14, ll. 15-35, 45-53.

Tobise teaches that the strength of the magnetic field produced by the permanent magnets is a product of the magnetic flux density " B_r ," and the thickness of the permanent magnet layer " t ". The higher the value of $B_r \cdot t$ the stronger is the magnetic field produced by the permanent magnets. The stronger the magnetic field produced by the permanent magnets, the stiffer the spin valve sensor becomes.

Tobise specifically teaches a narrow range for $B_r \cdot t$ to accomplish the objective of *Tobise*'s invention – the reduction in Barkhausen noise. *Tobise* expressly states that $B_r \cdot t$ value of above 500 Gmicrons results in undesirable drop in output. In making this statement, based on the explanation provided above, *Tobise* acknowledges that the magnetic stiffening of the spin valve sensor (causing the drop in output) is detrimental to *Tobise*'s invention. *Tobise* then specifies a precise range of 200-500 Gmicron to accomplish the objective of *Tobise*'s invention without stiffening the spin valve sensor.

In light of *Tobise*'s own disclosure and specific statements explained above, *Tobise* cannot

simultaneously teach not stiffening the spin valve sensor, and the use of stiffening elements. *Tobise's* teaching about a narrow range of $B_r t$ and the effects of this narrow range, cannot be extrapolated to imply teaching about all possible ranges of $B_r t$ and the distinct effects accompanying each distinct range. Especially, *Tobise's* teaching cannot be extrapolated as teaching magnetic stiffening, something from which *Tobise* expressly teaches away. Therefore, *Tobise* does not teach all the features of claim 1, and Applicants have overcome the rejection of claims 1 and 11 over *Tobise*. Consequently, *Tobise* also does not anticipate the inventions of claims 4-5, and 14-15 by virtue of their dependence from claims 1 and 11 respectively.

The Examiner has further rejected claim 1 in view of *Fontana*, stating:

Regarding claims 1 and 11, Fontana et al discloses a reduced sensitivity spin valve sensor apparatus (figure 5), comprising:
a spin valve sensor 60; and
at least one magnetic effect inducing device 91, 66,
wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields (column 8, lines 16-20) and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements.

Office action dated December 13, 2005, p. 3.

Contrary to the Examiner's assertion, *Fontana* does not teach "wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields."

In the sections that the Examiner cites from *Fontana* as teaching this claim feature, *Fontana* states:

The criteria for end region stabilization is that the net magnetic moment of the end region ferromagnetic layer be equivalent to 10-30 percent or greater than the net magnetic moment of the free layer ferromagnetic layer in the central active region.

Fontana, col. 8, ll. 16-20.

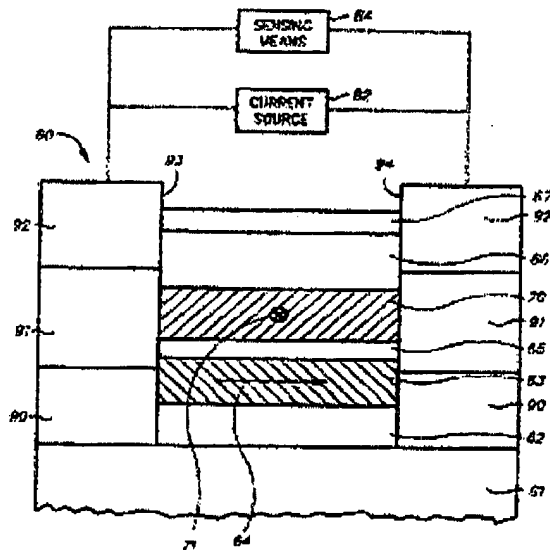


FIG. 5

Fontana, figure 5.

The cited section does not teach the claimed feature "wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields." In the cited sections and elsewhere, *Fontana* only teaches exchange bias control for the ends of the free layer by pinning the magnetic bias of the ends of the free layer so only the central part of the free layer is free to move in the presence of the magnetic medium.

The unpinned or "free" ferromagnetic layer may also have the magnetization of its extensions (those portions of the free layer on either side of the central active sensing region) also fixed, but in a direction perpendicular to the magnetization of the pinned layer so that only the magnetization of the free-layer central active region is free to rotate in the presence of an external field.

The resulting structure is a spin valve (SV) magnetoresistive sensor in which only the free ferromagnetic layer is free to rotate in the presence of an external magnetic field.

Fontana, col. 1, l. 62-col.2 l.2; col. 2, ll. 6-9.

In other words, *Fontana's* objective is not to induce the magnetic field to the entire free layer of the spin valve sensor but only to the ends of the free layer. As a result, this express teaching cannot be extrapolated to mean the entire spin valve sensor and not just the ends. In other words, *Fontana* does not teach this claimed feature when the cited section is viewed as a whole to properly interpret the teachings

pointed out by the examiner.

Furthermore, no teaching exists in *Fontana's* entire disclosure about reducing the sensitivity of the free layer through the induced magnetic field as in the claimed invention. *Fontana* is not concerned with the problem that claimed invention addresses – one of avoiding magnetic saturation of the free layer. *Fontana's* endeavors are directed to a completely different problem – one of fabricating a spin valve sensor without damaging the free layer and having improved end region behavior in the free layer. Each teaching is directed to the particular and distinct problem that each invention solves. While the claim teaches, “magnetic effect inducing device induces a magnetic field to the spin valve,” and not a portion of the spin valve, *Fontana* teaches only controlling magnetic bias of the ends of the free layer of the spin valve sensor. In fact, *Fontana* desires the central region of the free layer to be free to rotate, and therefore cannot teach magnetic biasing of the same region which would necessarily be biased if the entire free layer were to be biased as results from the features of the claim. When *Fontana* expressly teaches to keep the central region of the free layer free to rotate, such teaching cannot then simultaneously teach biasing the free layer of the spin valve sensor. This teaching is evident from the following quotations from *Fontana*:

The unpinned or "free" ferromagnetic layer may also have the magnetization of its extensions (those portions of the free layer on either side of the central active sensing region) also fixed, but in a direction perpendicular to the magnetization of the pinned layer so that only the magnetization of the free-layer central active region is free to rotate in the presence of an external field.

The free ferromagnetic layer in the SV sensor is present only in the central active sensing region of the sensor.

Fontana, col. 1, l. 62 – col. 2, l. 2; col. 2, ll. 47-49.

Therefore, *Fontana* does not teach the claim feature “wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields.” Therefore, *Fontana* does not teach all the features of claims 1 and 11. Consequently, *Fontana* also does not anticipate the inventions of claims 7, 17, and 21-36 by virtue of their dependence from claims 1 and 11 respectively.

The Examiner has further rejected this claim in view of *Miyauchi*, stating:

Regarding claims 1 and 11, *Miyauchi et al* discloses a reduced sensitivity spin valve sensor apparatus (figures 3-4), comprising:
a spin valve sensor; and
at least one magnetic effect inducing device 126,
wherein the at least one magnetic effect inducing device induces a magnetic field to the
spin valve sensor to thereby reduce a sensitivity of a free layer 121 of the

spin valve sensor to applied magnetic fields and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements (column 7, lines 58-64).

Office action dated December 13, 2005, p. 4.

Applicants have amended claim 1 to include the feature "wherein the spin valve sensor is positioned between at least two insulating films." This feature also is not taught by *Miyauchi*. Particularly, *Miyauchi* does not teach that the spin valve is positioned between two or more layers of insulating film. Therefore, *Miyauchi* does not teach all the features of claim 1 as amended, and the rejection of claims 1 and 11 over *Miyauchi* has been overcome. Consequently, *Miyauchi* also does not anticipate the inventions of claims 4-5, and 14-15 by virtue of their dependence from claims 1 and 11 respectively.

Therefore, the rejections of claims 1, 4-5, 7, 11, 14-15, 17, and 21-36 under 35 U.S.C. § 102(b) have been overcome.

b. As to Claims 6 and 16

The Examiner has rejected this claim in view of *Tobise*, stating:

Regarding claims 6 and 16, *Tobise et al* discloses that the at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate (column 14, lines 21-27).

Office action dated December 13, 2005, p. 3.

Claim 6 is representative of all claims in this group and recites:

The reduced sensitivity spin valve sensor apparatus of claim 1, wherein the at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate.

Contrary to the Examiner's assertion, *Tobise* does not teach the claimed feature "at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate."

In order to better analyze *Tobise*'s teaching in proper context, Applicants quote the complete paragraph from *Tobise*, sections of which the Examiner cites as teaching this claim feature, *Tobise* states:

Referring to FIG. 7 and FIG. 8, there are shown the changes in output and Barkhausen noise elimination for different values of r , where r is the ratio of the thickness of the permanent magnet film to the thickness of the movable magnetization film. As in the SAL-type MR head, the spin-valve MR head can eliminate Barkhausen noise for r in the range of 0.5-3. The output decreases as r increases. This might be because in the spin-valve head the magnetic field from the permanent magnet film is not applied only to the movable magnetization film but also leaks to the region around

the movable magnetization film, thereby influencing the signal field from the medium.

Tobise, col. 14, ll. 15-27.

The cited section from *Tobise* does not teach the invention of claim 6, but in effect quite the opposite of the features of claim 6. While claim 6 teaches how to reduce the spin valve's propensity to saturate by reduction of the spin valve sensor's sensitivity to the magnetic field of the medium, *Tobise* teaches how *not* to reduce the sensitivity and still reduce Barkhausen noise. *Tobise* specifies an optimal range for "r" (ratio of the thickness of the permanent magnet film to the thickness of the movable magnetization film) where sufficient reduction in Barkhausen noise is achieved without sacrificing the sensitivity.

In the cited section as well as the entire disclosure, *Tobise* teaches reduction of Barkhausen noise. *Tobise* explains that methods used for reduction of Barkhausen noise outside of a narrow specified range also result in reduction of the spin valve's sensitivity which is *undesirable*. Support for this teaching is additionally found in *Tobise* in the following quotation:

The narrowing of the playback track widths makes the longitudinal length of the MR film shorter, so that permanent magnetic films 21 disposed separately on either side are separated by a smaller interval of space. Consequently, a strong magnetic field is applied to the MR film. This means that using a permanent magnet film having the same residual flux density and film thickness product ($B_r t$) as is used for conventional wide playback tracks will have difficulty causing the rotation of the magnetization for the MR film. Further, while Barkhausen noise will be limited, the sensitivity will decrease. Thus, it is necessary to minimize the ($B_r t$) product within a range where Barkhausen noise can be limited without decreasing sensitivity.

Tobise, col. 5, ll. 11-23.

Therefore, instead of supporting the Examiner's contention, *Tobise* undoubtedly teaches away from reducing the spin valve's sensitivity, and therefore teaches away from the features of the claimed invention. For the reasons described above *Tobise* does not anticipate claim 6.

Furthermore, in the sections that the Examiner cites for supporting the rejection the feature "at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate" does not contain any teaching related to spin valve sensor's propensity to saturate. In fact, *Tobise* as a whole does not disclose any concern with the magnetic saturation of the spin valve sensor anywhere.

Therefore, *Tobise* does not teach the claimed feature "at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate" and does not anticipate the invention of claim 6.

c. As to Claims 8-9, and 18-19

The Examiner has rejected this claim in view of *Fontana*, stating:

Regarding claims 8-9 and 18-19, *Fontana* et al discloses that the antiferromagnet layer generate a longitudinal exchange induced bias field in the free layer that reduces the sensitivity of the free layer to applied magnetic fields (column 8, lines 16-20).

Office action dated December 13, 2005, p. 4.

Claim 8 is representative of all claims in this group and recites:

The reduced sensitivity spin valve sensor apparatus of claim 7, wherein the antiferromagnet layer aligns atomic moments in the free layer of the spin valve sensor.

Contrary to the Examiner's assertion, *Fontana* does not teach, "wherein the antiferromagnet layer aligns atomic moments in the free layer of the spin valve sensor."

In the sections that the Examiner cites from *Fontana* as teaching this claim feature, *Fontana* states:

The criteria for end region stabilization is that the net magnetic moment of the end region ferromagnetic layer be equivalent to 10-30 percent or greater than the net magnetic moment of the free layer ferromagnetic layer in the central active region.

Fontana, col. 8, ll. 16-20.

The Examiner has borrowed from *Miyauchi*'s recital of longitudinal exchange bias to fashion a rejection based solely on *Fontana*. *Miyauchi* is not a basis for the Examiner's present rejection. Neither *Fontana*, nor the features of claim 8 disclose the generation of "longitudinal exchange induced bias field," with which the Examiner takes issue.

Furthermore, as described in section I.a, *supra*, the citation by the Examiner from *Fontana* teaches only fixing the end bias on the free layer. The purpose of *Fontana*'s apparatus is not to induce a bias along the entire free layer so as to reduce the sensitivity to larger magnetic flux in low-density mediums. *Fontana* seeks to control the end bias of the free layer so that only the central region of the free layer is free to rotate, so that the spin valve sensor can be adapted to read narrow mediums. *Fontana*'s method permanently magnetizes the ends of the free layer during fabrication of the sensor, which is not the case in the claimed invention. The claimed invention teaches a magnetic bias along the entire width of the spin valve sensor, and the entire free layer rotates under the bias. The two problems – one of reading a narrow medium as in *Fontana*, and the other of reading a low-density medium as in the application – are distinct from each other, as are the solutions of *Fontana* and the claimed invention.

Therefore, *Fontana* does not teach the claimed feature “The reduced sensitivity spin valve sensor apparatus of claim 7, wherein the antiferromagnet layer aligns atomic moments in the free layer of the spin valve sensor.”

The Examiner has further rejected this claim in view of *Miyauchi*, stating:

Regarding claims 8-9 and 18-19, *Miyauchi* discloses that the antiferromagnet layer generate a longitudinal exchange induced bias field in the free layer that reduces the sensitivity of the free layer to applied magnetic fields (column 7, lines 58-66).

Office action dated December 13, 2005, p. 4.

In the sections that the Examiner cites from *Miyauchi* as teaching this claim feature, *Miyauchi* states:

While the exchange bias magnetic field applied by the magnetic domain control film 126 is required to have a magnitude that is large enough to create a single magnetic domain in the first ferromagnetic film 121 in, for instance, direction (X), if it becomes too large, the reversal of magnetization of the first ferromagnetic film 121 is dulled, reducing the magnetic field sensitivity.

Miyauchi, col. 7, ll. 58-66.

Miyauchi also does not teach, “wherein the antiferromagnet layer aligns atomic moments in the free layer of the spin valve sensor.” *Miyauchi*, like *Fontana*, is concerned with efficient reading of narrow tracks without the Barkhausen noise generated in the end regions of the free layer due to the movement of the magnetic medium. *Miyauchi* is additionally concerned with the ease and efficiency of production of magnetic transducers that incorporate the reduced Barkhausen noise capabilities, and discloses a layered structure suited for conventional photolithographic production techniques. *Miyauchi*, like *Fontana*, also teaches using only the central region of the free layer, whether the free layer is anisotropic magnetoresistance effect film, or a Giant magnetoresistance effect film such as a spin valve film. *Miyauchi* states the desirability of only an active central region in numerous places in the disclosure and a selection of such statements is reproduced below:

As a result, the effective magnetic transducing area is defined by the width of the central active area measured in the direction of the pair of lead conductor films.

Thus, unlike the exchange-coupling bias method of the prior art, no noise that can be attributed to the structure of the end passive areas, which do not constitute part of the magnetic transducing area, is generated. Moreover, since the laminated film that generates the magnetoresistance effect and the magnetic domain control film are laminated to each other and the bias magnetic field applied by the magnetic domain control film is

generated only in the central active area, unlike in the hard magnet bias method of the prior art, it is possible for the magnetic domain control film to exert consistent magnetic domain control over the laminated film which generates the magnetoresistance effect, to reliably impose the required magnetic characteristics in the central active area.

Miyauchi, col. 3, ll. 37-39, 51-64.

Therefore, at least with respect to the active region of the free layer in the spin valve sensor, *Miyauchi* is as distinct from the claimed invention as *Fontana*.

Furthermore, the claimed invention is concerned with reducing the magnetic field sensitivity of the free layer, thereby reducing the spin valve sensor's propensity to magnetically saturate while reading low-density magnetic media. The section that the Examiner quotes from *Miyauchi* teaches away from designing the magnetic domain control film such that the magnetic field sensitivity of the free layer is reduced. The sentence following the Examiner's citation is crucial in establishing this fact. The complete teaching of *Miyauchi* in the cited section reads,

While the exchange bias magnetic field applied by the magnetic domain control film 126 is required to have a magnitude that is large enough to create a single magnetic domain in the first ferromagnetic film 121 in, for instance, direction (X), if it becomes too large, the reversal of magnetization of the first ferromagnetic film 121 is dulled, reducing the magnetic field sensitivity. Consequently, it is desirable to set the exchange bias magnetic field applied by the magnetic domain control film 126 at the minimum whereby a single magnetic domain can be achieved in the first ferromagnetic film 121.

Miyauchi, col. 7, l. 58 – col. 8, l. 1.

In effect, the above section teaches that large magnetic field induced by the magnetic domain control film reduces the magnetic field sensitivity of the free layer, and therefore the domain control film should apply just the minimum magnetic field necessary to produce the desired central active region in the free layer. *Miyauchi* teaches not to reduce the magnetic field sensitivity of the free layer whereas the claimed invention is specifically designed to reduce the magnetic field sensitivity of the free layer in the spin valve sensor.

Applications of the *Miyauchi* invention are also vastly different from those of the claimed invention. *Miyauchi* targets the problem of reading high-density (narrow track) magnetic media; the claimed invention targets low density magnetic media. *Miyauchi* requires fixed end regions in the free layer; claimed invention has no such requirements.

For these reasons, *Miyauchi* also does not anticipate claim 8, and Applicants have overcome Examiner's rejection of claims 8-9, and 18-19.

d. As to Claims 10 and 20

The Examiner has rejected this claim in view of *Tobise*, stating:

Regarding claims 10 and 20, *Tobise* et al discloses at least one insulating film 42; and at least one magnetic shield 52, wherein the insulating film is alumina (column 13, lines 62-63).

Office action dated December 13, 2005, p. 3.

Claims 10 and 20 have been amended by Applicants and the amendments obviate the Examiner's rejection of these claims. Claim 10 is representative of all claims in this group and recites:

The reduced sensitivity spin valve sensor apparatus of claim 1, further comprising:
at least one insulating film; and
at least one magnetic shield, wherein the insulating ~~film is~~ films are one of alumina, silicon nitride and aluminum nitride.

Amended claim 10 as depends from the amended claim 1 claims more than one insulating film. *Tobise* teaches a single insulating film and not at least two insulating films as claimed. The amended claimed feature "wherein the insulating *films are* one of alumina, silicon nitride and aluminum nitride" is not taught by *Tobise*. Therefore, *Tobise* does not teach all the features of claim 10 as amended, and the rejection of claims 10 and 20 over *Tobise* has been overcome.

II. Conclusion

It is respectfully urged that the subject application is patentable over the prior art of record and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: March 7, 2006

Respectfully submitted,



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